

## CURRICULUM VITAE

**Chunjiang Qian**  
**Associate Professor**

**I. GENERAL INFORMATION****A. Personal Data:**

Name: Chunjiang Qian  
Tel: (210) 458-5587  
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**B. Education:**

Ph.D. Electrical Engineering and Computer Science, Case Western Reserve University, Cleveland, OH, 2001.  
Dissertation: "*Global Synthesis of Nonlinear Systems with Uncontrollable Linearization.*"

M.S. Control Theory and Operations Research, Fudan University, China, 1994.  
Thesis: "*Positive Real Lemma of Systems with Time Delay.*"

B.S. Control Theory, Fudan University, China, 1992.

**C. Academic Appointments** (chronological with latest first):

2005-Present **Associate Professor**, Dept. of Electrical and Computer Engineering, University of Texas at San Antonio, Texas.

2008-Present **Associated Faculty**, Joint Graduate Program in Biomedical Engineering, UTSA/UTHSCSA.

2001-2005 **Assistant Professor**, Dept. of Electrical Engineering, University of Texas at San Antonio, Texas.

1997-2001 **Research/Teaching Assistant**, Department of Electrical Engineering and Computer Science, Case Western Reserve University, Cleveland, Ohio.

**D. Other Employment:**

1994-1997 **Engineer**, Tianlong Science and Technology Company, China.

**E. Consulting:**

Consultant for Project: "Prediction of the Post Yield Behavior of Bone," NIH, 2006-2008.

**F. Certification and Licensure:****G. Honors and Awards**

2008 **Excellence Service Award**, Alstom Power Plant Laboratories.

2008 **Visiting Scholar Fellowship**, Hwa Ying Foundation for Education & Culture, China.

2006 **Faculty Research Award**, University of Texas at San Antonio.

2004 **Member**, Electrical Engineering Honor Society Eta Kappa Nu Association.

2003 **NSF CAREER Award**, U.S. National Science Foundation.

2003 **Faculty Research Award**, University of Texas at San Antonio.

2003 **Outstanding Reviewer** of Journal Automatica.

2003 **Senior Member**, IEEE.

2003 **Best Presenter of the Session**, 2003 American Control Conference.

1991 **Meritorious Award** in 1991 Mathematical Contest in Modeling (MCM), The Consortium for Mathematics and Its Applications.

## II. TEACHING

### A. Classroom/Laboratory:

<u>Date</u>	<u>Course</u>	<u>Level</u>
Fall 2008	EE 5143 Linear Control Systems	G
Fall 2008	EE 4443 Discrete-Time and Computer Controlled Systems	U
Spring 2008	EE 4733 Intelligent Control	U
Fall 2007	EE 5243 Nonlinear Systems	G
Fall 2007	EE 4443 Discrete-Time and Computer Controlled Systems	U
Spring 2007	EE 6973 SP: Engineering Optimization	G
Fall 2006	EE 5143 Linear Control Systems	G
Fall 2006	EE 4443 Discrete-Time and Computer Controlled Systems	U
Spring 2006	EE 4733 Intelligent Control	U
Fall 2005	EE 5143 Linear Control Systems	G
Fall 2005	EE 4443 Discrete-Time and Computer Controlled Systems	U
Summer 2005	EE 3413 Analysis and Design of Control Systems	U
Spring 2005	EE 6343 Robust Nonlinear Control	G
Spring 2005	EE 4733 Intelligent Control	U
Fall 2004	EE 5143 Linear Control Systems	G
Fall 2004	EE 4443 Discrete-Time and Computer Controlled Systems	U
Summer 2004	EE 3413 Analysis and Design of Control Systems	U
Spring 2004	EE 7443 Nonlinear Control Systems	G
Fall 2003	EE 5143 Linear Control Systems	G
Summer 2003	EE 4443 Discrete-Time and Computer Controlled Systems	U
Spring 2003	EE 4733 Intelligent Control	U
Fall 2002	EE 5243 Adaptive Control	G
Summer 2002	EE 4443 Discrete-Time and Computer Controlled Systems	U
Spring 2002	EE 5243 Nonlinear Systems	G
Fall 2001	EE 3513 Electromechanical Systems	U

Level: Undergraduate (U), Graduate (G)

### B. Instructional Development:

#### 1. Courses Developed (Course number, title, date)

<u>Course Number</u>	<u>Course Title</u>	<u>Date</u>
EE 6973	Engineering Optimization	Spring 2007
EE 6343	Robust Nonlinear Control	Spring 2005
EE 7443	Nonlinear Control	Spring 2004
EE 5243	Nonlinear Systems	Spring 2002

#### 2. Media and Software Developed

### C. Masters' Theses and Ph.D. Dissertations Directed

#### 1. Master Theses

1. Thesis Advisor for Ruting Jia, M.S. Thesis: "Controller design for a tri-turbofan airship system based on particle swarm optimization algorithm & neural network technology," (completed, July 2008), UTSA.
2. Thesis Advisor for Albert Portillo, M.S. Thesis: "Using the particle swarm optimizer to solve for PID values for a BLDC motor," (completed, April 2008) UTSA.
3. Thesis Advisor for Edward Aranda, M.S. Thesis: "Model Development, State Estimation and Controller Design of a Nonlinear Utility Boiler Model," (completed, July 2007), UTSA.
4. Thesis Advisor for Christopher Woodland, M.S. Thesis: "Optimal Control Using Chebyshev Pseudo-spectral Method with Application to Raptor Helicopter," (completed, April 2006) UTSA.
5. Thesis Advisor for Mythri Pinnamaneni, M.S. Thesis: "Nonlinear Equation of Motion in the Simulation of the Raptor 50V2 Remote Controlled Helicopter with Optimal Controller Design," (completed, May 2005) UTSA.

6. Thesis Advisor for Yuanlin Lu M.S. Thesis: "*Decentralized output feedback control of large-scale uncertain interconnected with unmeasurable states*," (completed, November 2003) UTSA.
7. Thesis Advisor for Subhadra Bhupathiraju, M.S. Thesis: "*Global Output Feedback Stabilization of Uncertain Nonholonomic Systems with Applications to Mobile Robots*," (completed, August 2003) UTSA.
8. Thesis Advisor for Justin Franz, M.S. Thesis: "Output feedback control of nonlinear uncertain systems with applications to robotics" (expected 05/2009), UTSA.
9. Thesis Advisor for Nick Grady, M.S. Thesis: TBD (expected 08/2009), UTSA.
10. Thesis Advisor for Roseann Trienvo, M.S. Thesis: TBD (expected 05/2009), UTSA.
11. Thesis Advisor for Deliang Chen, M.S. Thesis: TBD (expected 05/2009), UTSA.

## 2. Ph.D. Dissertations

1. Dissertation Advisor for Ji Li Ph.D. Dissertation: "*Global output feedback stabilization of inherently nonlinear systems using finite-time controller*," Completed in April 2007, UTSA.
2. Dissertation Advisor for Michael T. Frye Ph.D. Dissertation: "*Advanced nonlinear control theory: Robustness and stability with applications to aircraft flight control systems*," Completed in November 2006, UTSA.
3. Dissertation Co-Advisor for Jason E. Polendo Ph.D. Dissertation: "*Global synthesis of highly dynamic systems with limited and uncertain information*," Completed in November 2006, UTSA.
4. Dissertation Advisor for Shizhong Yang Ph.D. Dissertation: TBD, Expected 2011, UTSA.
5. Dissertation Advisor for Ruting Jia Ph.D. Dissertation: TBD, Expected 2011, UTSA.
6. Dissertation Co-Advisor for visiting student Shihong Ding Ph.D. Dissertation: TBD, Expected 2009, Southeast University, China.

## D. Membership on Graduate Committees

### 1. Master Theses

1. Chair, Thesis Committee of Ruting Jia, 2008.
2. Chair, Thesis Committee of Albert Portillo, 2008.
3. Chair, Thesis Committee of Edward Aranda, 2007
4. Chair, Thesis Committee of Christopher Woodland, 2006.
5. Chair, Thesis Committee of Mythri Pinnamaneni, 2005.
6. Member, Thesis Committee of Chandrakumar Bhumireddy, 2004.
7. Chair, Thesis Committee of Subhadra Bhupathiraju, 2003.
8. Chair, Thesis Committee of Yuan Lin, 2003.
9. Member, Thesis Committee of Charu Jain, 2003.

### 2. Ph.D. Dissertations

1. Chair, Ph.D. Dissertation Committee of Ji Li, 2007.
2. Chair, Ph.D. Dissertation Committee of Michael T. Frye, 2006.
3. Co-Chair, Ph.D. Dissertation Committee of Jason Polendo, 2006.

## E. Postdoctoral Fellows Supervised

Dr. Qi Gong, (2006-2008) UTSA.

## F. Undergraduate Students (Research) Supervised

1. Research Advisor for undergraduate students Chris Pitts, Chris Brucks, Brandy Alger and Philip So, 2008.
2. Research Advisor for undergraduate students James Sturdivant and Sylvester Meighan, Fall 2007.
3. Research Advisor for undergraduate students Chris Brucks, Daniel Seiler, Brandy Alger, supported by Engineering Research Lab Scholarship, 2007.
4. Advisor for Senior Design Project: Low Cost UAV Controller. Team #4: Ryan Morlino, Chris Landeros, Sylvester Meighan, Stephen Verschoyle, Spring 2007.
5. Research Advisor for undergraduate students Luis Alonso under Louis Stokes Alliance for Minority Participation Program (2005-2006), UTSA.

6. Research Advisor for undergraduate students Stephen Gammon and Nicolas Grady under REU program, (2005-2006), UTSA.
7. Research Advisor for undergraduate student Juan Portillo under Louis Stokes Alliance for Minority Participation Program. Research project: "Control Applications of Nonlinear Systems with Unknown Parameters," (recipient of First Place Prize in poster Computer Science and Mathematics category of 2002 National Association for Equal Opportunity in Higher Education High Tech Student Expo) (January 2002-May 2002) UTSA.
8. Project Advisor for undergraduate students Albert Portillo, James Vital and John Perez on their TSGC Greenhouse Robot project. (May 2003-December 2003) UTSA.

### III. RESEARCH

#### A. Bibliography:

##### 1. Books/Book Chapters

###### 1a. Books

Chunjiang Qian and Wei Lin, Nonlinear Control: From Smooth to Nonsmooth, In Progress.

###### 1b. Book Chapters

1. J. Polendo, C. Qian and C. Schrader, Homogeneous Domination and Decentralized Control Problem for Nonlinear System Stabilization, Advances in Statistical Control, Algebraic Systems Theory, and Dynamic Systems Characteristics, Systems and Control: Foundations and Applications, C. Won, C. B. Schrader; A. N. Michel (Eds.), Birkhauser (2008) 257-280.
2. J. Polendo and C. Qian, A Generalized Framework for Global Output Feedback Stabilization of Inherently Nonlinear Systems, Control Theory and Related Topics, S. Tang and J. Yong Eds., World Scientific, Singapore (2007).
3. C. Qian and W. Lin, New Results on Nonsmooth Output Feedback Stabilization of Nonlinear Systems, New Directions in Control Theory and Applications, Lecture Notes in Control and Information Sciences, W.P. Dayawansa, A. Lindquist, and Y. Zhou Eds. Springer-Verlag (2005) 305-320.
4. C. Qian and W. Lin, Time-Varying Output Feedback Control of a Family of Uncertain Nonlinear Systems, New Trends in Nonlinear Dynamics and Control, and their Applications, Lecture Notes in Control and Information Sciences, W. Kang, M. Xiao, and C. Borges Eds. Springer (2003) 237-250.
5. C. Qian and W. Lin, Global Stabilization of Nonlinear Systems: A Continuous Feedback Framework, Adaptive and Nonlinear Control, Lecture Notes in Control and Information Sciences, D. Owens and A. Zinober Eds. Springer-Verlag (2003) 295-315.

##### 2. Journal Papers (refereed full length)

###### 2a. Published or In Press

1. J. Li, C. Qian and M. Frye, A Dual Observer Design for Global Output Feedback Stabilization of Nonlinear Systems with Low-Order and High-Order Nonlinearities, International Journal of Robust and Nonlinear Control, Published Online Nov 2008.
2. J. Polendo and C. Qian, An Expanded Method to Robustly Stabilize Uncertain Nonlinear Systems, Communications in Information and Systems, 2008 (in press).
3. Q. Gong and C. Qian, Global Practical Output Regulation of a Class of Nonlinear Systems by Measurement Feedback, IFAC Journal Automatica, Vol. 43 (2007) 184-189.
4. J. Polendo and C. Qian, A Generalized Homogeneous Approach for Global Stabilization of Inherently Nonlinear Systems Via Output Feedback, International Journal of Robust and Nonlinear Control, Vo. 17, (2007), 605-629.
5. C. Qian and W. Lin, Recursive Observer Design, Homogeneous Approximation, and Nonsmooth Output Feedback Stabilization of Nonlinear Systems with Unstabilizable/Undetectable Linearization, IEEE Transactions on Automatic Control, Vol. 51, No. 9 (2006) 1457- 1471.

6. J. Li and C. Qian, Global Finite-Time Stabilization by Dynamic Output Feedback for a Class of Continuous Nonlinear Systems, IEEE Transactions on Automatic Control, Vol. 51, No. 5 (2006) 879-884.
7. C. Qian and J. Li, Global output feedback stabilization of upper-triangular nonlinear systems using a homogeneous domination approach, International Journal of Robust and Nonlinear Control, Vol. 16, Issue 9 (2006) 441-463.
8. X. Wang and C. Qian, Prediction of microdamage formation using a mineral-collagen composite model of bone, Journal of Biomechanics, Vol. 39 No. 4 (2006) 595-602.
9. M. Frye, C. Qian, and R. Colgren, Decentralized Control of Large-Scale Uncertain Nonlinear Systems by Linear Output Feedback, Communications in Information and Systems, Vol. 4, No. 3 (2005) 191-210.
10. C. Qian and J. Li, Global Finite-Time Stabilization by Output Feedback for Planar Systems without Observable Linearization, IEEE Transactions on Automatic Control, Vol. 50, No. 6, (2005) 885-890.
11. C. Qian, Semi-Global Stabilization of a Class of Uncertain Nonlinear Systems by Linear Output Feedback, IEEE Transactions on Circuit and Systems II, Vol. 52, No. 4, (2005) 218-222.
12. C. Qian and W. Lin, Nonsmooth Output Feedback Stabilization of a Class of Genuinely Nonlinear Systems in the Plane, IEEE Transactions on Automatic Control, Vol. 48, No. 10 (2003) 1824-1829.
13. W. Lin, C. Qian and X. Huang, Almost Disturbance Decoupling of a Class of Nonlinear Systems via Output Feedback, International Journal of Robust and Nonlinear Control, Vol. 13 No. 15 (2003) 1359-1369.
14. C. Qian and W. Lin, Smooth Output Feedback Stabilization of Planar Systems without Controllable/Observable Linearization, IEEE Transactions on Automatic Control, Vol. 47, No. 12 (2002), 2068-2073.
15. C. Qian and W. Lin, Output feedback control of a class of nonlinear systems: a nonseparation principle paradigm, IEEE Transactions on Automatic Control, Vol. 47, No. 10 (2002), 1710-1715.
16. W. Lin and C. Qian, Adaptive control of nonlinearly parameterized systems: the smooth feedback case, IEEE Transactions on Automatic Control, Vol. 47, No. 8 (2002) 1249-1266.
17. W. Lin and C. Qian, Adaptive regulation of cascade systems with nonlinear parameterization, International Journal of Robust and Nonlinear Control, Vol. 12, No. 12 (2002) 1093-1108.
18. W. Lin and C. Qian, Adaptive control of nonlinearly parameterized systems: a nonsmooth feedback framework, IEEE Transactions on Automatic Control, Vol. 47, No. 5 (2002), 757-774.
19. C. Qian and W. Lin, Global practical output tracking of nonlinear systems with applications to underactuated unstable mechanical systems, IEEE Transactions on Automatic Control, Vol.47, No. 1 (2002), 21-36.
20. W. Lin, R. Pongvuthithum, and C. Qian, Control of High-Order Nonholonomic Systems in Power Chained Form by Discontinuous Feedback, IEEE Transactions on Automatic Control, Vol. 47, No. 1 (2002) 108-115.
21. C. Qian and W. Lin, A continuous feedback approach to global strong stabilization of nonlinear systems, IEEE Transactions on Automatic Control, Vol. 46, No. 7, (2001), 1061-1079.
22. C. Qian, W. Lin and W. P. Dayawansa, Smooth feedback, global stabilization and disturbance attenuation of nonlinear systems with uncontrollable linearization, SIAM Journal on Control & Optimization, Vol. 40 No.1 (2001) 191-210.
23. C. Qian and W. Lin, Non-Lipschitz continuous stabilizers for nonlinear systems with uncontrollable unstable linearization, Systems & Control Letters, Vol. 42, No. 3, (2001), 185-200.
24. W. Lin and C. Qian, Semi-global robust stabilization of MIMO nonlinear systems by partial state and dynamic output feedback, Automatica, Vol.37, No. 7 (2001) 1093-1101.
25. C. Qian and W. Lin, Almost disturbance decoupling for a chain of power integrators perturbed by a lower-triangular vector field, IEEE Transactions on Automatic Control, Vol. 45, No. 6, (2000) 1208-1214.
26. W. Lin and C. Qian, Adaptive regulation of high-order lower-triangular systems: an adding a power integrator technique, Systems & Control Letters, Vol.39 (2000), 353-364.
27. W. Lin and C. Qian, Adding one power integrator: a tool for global stabilization of high-order lower-triangular systems, Systems & Control Letters, Vol. 39, (2000), 339-351.
28. W. Lin and C. Qian, Robust regulation of a chain of power integrators perturbed by a lower-triangular vector field, International Journal of Robust and Nonlinear Control, Vol. 10, (2000), 397-421.

## 2b. Submitted/Under Preparation.

1. S. Ding, C. Qian, and S. Li, Global stabilization of a class of feedforward systems with low-order nonlinearities, *IEEE Transactions on Automatic Control*, Under Preparation.
2. C. Qian, Output Feedback Stabilization of a Class of Nonlinear Upper-Triangular Systems with Multiple Measurable States, *IEEE Transactions on Automatic Control*, Under Preparation.
3. S. Ding, C. Qian, and S. Li, Global stabilization of a class of inherently nonlinear systems in upper-triangular form, *International Journal of Robust and Nonlinear Control*, Under Preparation.
4. M. Frye, S. Ding, and C. Qian, Global output feedback stabilization of a PVTOL aircraft, *AIAA Journal of Guidance, Control, and Dynamics*, under preparation.

## 3. *Conference Papers*

### 3a. Published or Accepted

1. S. Yang and C. Qian, Real-Time Optimal Control of a Boiler-Turbine System Using Pseudospectral Methods, to appear in Proc. of 52nd Annual ISA POWID Symposium, Chicago, IL, 2009.
2. M. Frye, S. Yang and C. Qian, Optimal Control of a Drum-Boiler Turbine System Using PSO Predictive Control, to appear in Proc. of 52nd Annual ISA POWID Symposium, Chicago, IL, 2009.
3. S. Yang, C. Qian, and J. Lu, Adaptive Controller Design for a Nonlinear Drum-Boiler Turbine System, Proc. of 2008 IEEE International Conference on Control Applications, San Antonio, TX, (2008) 335 - 340.
4. S. Yang and C. Qian, Controller Design for a Nonlinear Drum-Boiler Turbine System, Proc. of 51st Annual ISA POWID Symposium, Scottsdale, AZ, 2008.
5. M. Frye, C. Qian, R. Colgren, S. Oh, Decentralized Output Feedback Control of Interconnected Systems Using Low Gain-High Gain Feedback Domination, Proc. of the 17th IFAC World Congress, South Korea, (2008) 13145-13150.
6. E. Aranda, M. Frye, and C. Qian, Model Development, State Estimation, and Controller Design of a Nonlinear Utility Boiler System, Proc. of IEEE International Conference on Industrial Technology, China, (2008) 1-6.
7. J. Li, C. Qian and M. Frye, A Dual Observer Design for Global Output Feedback Stabilization of Nonlinear Systems with Low-Order and High-Order Nonlinearities, Proc. of 2007 IEEE Conference on Decision and Control, New Orleans, LA (2007) 3351-3356.
8. J. Polendo and C. Qian, Decentralized Output Feedback Control of Interconnected Systems with High-Order Nonlinearities, Proc. of 2007 American Control Conference, New York, NY (2007) 1479-1484.
9. M. Frye, S. Gammon, and C. Qian, The 6-DOF Dynamic Model and Simulation of the Tri-Turbofan Remote-Controlled Airship, Proc. of 2007 American Control Conference, NY, (2007) 816-821.
10. J. Polendo, C. Qian, H. Lei, and W. Lin, A Dual Observer Method for the Global Stabilization of Nonlinear Systems with Limited and Uncertain Information, Proc. of 2007 American Control Conference, NY (2007) 2600-2605.
11. J. Polendo, J. Franz, and C. Qian, Homogeneous Domination Design using Dual Observers: A Tool for Global Output Feedback Stabilization of Nonlinear Systems with Polynomially Growing Unmeasurable States, (Invited Paper) Proc. of the Sixth IEEE International Conference on Control and Automation, Guangzhou, China, (2007) 1507-1512.
12. R Trevino, M. Frye, J A Franz, and C. Qian, Robust Receding Horizon Control of a Tri-Turbofan Airship, Proc. of the Sixth IEEE International Conference on Control and Automation, Guangzhou, China, (2007) 671-676.
13. M. Frye, R. Trevino, and C. Qian, Output Feedback Stabilization of Nonlinear Feedforward Systems using Low Gain Homogeneous Domination, (Invited Paper) Proc. of the Sixth IEEE International Conference on Control and Automation, Guangzhou, China, (2007) 422-427.
14. J. Franz, S. Cortinas, and C. Qian, VDM-(Vertical Displacement Manipulator), Proceeding of the 2007 ASEE Gulf-Southwest Annual Conference, South Padre Island, Texas, March, 2007. **(Best Student Paper--3<sup>rd</sup> Place)**
15. N. Grady, and C. Qian, Development of a Long-Range Wireless Outdoor Surveillance Rover, Proceeding of the 2007 ASEE Gulf-Southwest Annual Conference, South Padre Island, Texas, March, 2007.

16. S. Gammon, M. Frye, and C. Qian, The Development of the Twenty Foot Airship Aerostatic Solid Works Three Dimensional Model, Proceeding of the 2007 ASEE Gulf-Southwest Annual Conference, South Padre Island, Texas, March, 2007.
17. S. Gammon, M. Frye, C. Qian and R. Trevino, The Development of the Tri-Turbofan Airship Model for Autonomous Flight Control Research, AIAA Guidance, Navigation, and Control Conference and Exhibit, Keystone, Colorado, Aug 2006, AIAA-2006-6620.
18. N. Grady, M. Frye, and C. Qian, The Instrumentation and Flight Testing of a Rotorcraft Vehicle for Undergraduate Flight Control Research, AIAA Guidance, Navigation, and Control Conference and Exhibit, Keystone, Colorado, Aug 2006, AIAA-2006-6739.
19. N. Grady, M. Frye and C. Qian, The development of a high performance UAV for flight and control research, 2006 IEEE Region 5 Technical, Professional, and Student Conference, San Antonio, Texas, April 2006.
20. S. Gammon, M. Frye and C. Qian, The mathematical model of the tri-turbofan airship for autonomous formation control research, 2006 IEEE Region 5 Technical, Professional, and Student Conference, San Antonio, Texas, April 2006.
21. J. Polendo and C. Qian, A Universal Method for Robust Stabilization of Nonlinear Systems: Unification and Extension of Smooth and Non-Smooth Approaches, Proc. of 2006 American Control Conference, Minneapolis, Minnesota, (2006) 4285-4290.
22. J. Li and C. Qian, Global Finite-Time Stabilization by Output Feedback for a Class of Linearly Unobservable Systems, Proc. of 2006 American Control Conference, Minneapolis, Minnesota, (2006), 4987-4992.
23. J. Li and C. Qian, Global Finite-Time Stabilization for a Class of Uncertain Nonlinear Systems Using Output Feedback, Proceeding of the joint Conference of IEEE CDC and 2005 European Control Conference, Spain, (2005) 2652-2657.
24. Q. Gong and C. Qian, Global Practical Tracking of a Class of Nonlinear Systems by Output Feedback, Proceeding of the joint Conference of IEEE CDC and 2005 European Control Conference, Spain, (2005) 7278-7283.
25. J. Polendo and C. Qian, A Generalized Framework for Global Output Feedback Stabilization of Genuinely Nonlinear Systems, Proceeding of the joint Conference of IEEE CDC and 2005 European Control Conference, Spain, (2005) 2646-2651.
26. M. Frye, C. Qian, and R. Colgren, Receding horizon control of a 6-DOF model of Raptor 50 helicopter: robustness to changing flight conditions, Proceeding of 2005 Conference on Control Applications, Canada, (2005) 185 - 190.
27. M. Frye, C. Qian, and R. Colgren. Receding Horizon Control of a Linear Parameter Varying Model of the Raptor 50 Helicopter. Proceeding of 2005 AIAA Guidance, Navigation, and Control Conference and Exhibit, San Francisco, CA, Aug 2005, AIAA-2005-6372.
28. M. Pinnamaneni, M. Frye, C. Qian, and R. Colgren. Nonlinear Equations of Motion in the Simulation of the Raptor 50 V2 Remote Controlled Helicopter. Proceeding of 2005 AIAA Guidance, Navigation, and Control Conference and Exhibit, San Francisco, CA, Aug 2005, AIAA-2005-6421.
29. C. Qian, A homogeneous domination approach for output feedback stabilization of a class of nonlinear systems, Proc. of 2005 American Control Conference, Portland, OR, (2005) 4708-4715.
30. J. Li and C. Qian, Global Output Feedback Stabilization of a Class of Nonsmooth Nonlinear Systems, Proc. of 2005 American Control Conference, Portland, OR, (2005) 4716-4721.
31. C. Qian and J. Li, Global Finite-Time Stabilization of Uncertain Nonlinear Systems by Output Feedback, Proceeding of 43rd IEEE Conference on Decision and Control, Bahamas, (2004) 4113-4118.
32. C. Qian and W. Lin, Recursive Observer Design and Nonsmooth Output Feedback Stabilization of Inherently Nonlinear Systems, Proceeding of 43rd IEEE Conference on Decision and Control, Bahamas, (2004) 4927-4932.
33. Y. Lu, M. Frye and C. Qian, Decentralized Output Feedback Control of Large-Scale Interconnected Nonlinear Systems with Applications to Multi-Vehicle Systems, Proceeding of 2004 AIAA Guidance, Navigation, and Control Conference and Exhibit, Providence, RI, Aug 2004.
34. J. Li, M. Frye, and C. Qian, Finite-Time Stabilization of Planar Systems with Actuator Saturation Constraints: An Application to the Reaction Control System, Proceeding of 2004 AIAA Guidance, Navigation, and Control Conference and Exhibit, Providence, Rhode Island, Aug 2004.

35. M. Frye, Y. Lu, and C. Qian, Decentralized Output Feedback Control of Large-Scale Nonlinear Systems Interconnected by Unmeasurable States, Proc. of 2004 American Control Conference, Boston, MA, (2004) 4267-4272.
36. M. Frye, J. Li and C. Qian, Finite-Time Stabilization of the NASA CEV Reaction Control System with Actuator Saturation by Position Measurements, 2004 IEEE Region 5 Technical Conference, Oklahoma City, Oklahoma, 2004.
37. C. Qian and W. Lin, Nonsmooth Output Feedback Stabilization and Tracking of a Class of Nonlinear Systems, Processing of 42nd IEEE Conference on Decision and Control, Maui, Hawaii (2003) 43-48.
38. S. Bhupathiraju, C. Qian and A.C. Rogers, Global Output Feedback Stabilization of Uncertain Nonholonomic Systems with Applications to Mobile Robots, Proceeding of 2003 IEEE International Symposium on Intelligent Control, Houston, Texas, (2003) 490-495.
39. C. Qian, C. Schrader and W. Lin, Global Regulation of a Class of Uncertain Nonlinear Systems Using Output Feedback, Proceeding of 2003 American Control Conference, Denver, CO (2003) 1542-1547.
40. C. Qian and W. Lin, Output feedback stabilization of planar systems with uncontrollable/unobservable linearization, Proceeding of 41st IEEE Conference on Decision and Control (invited paper), Las Vegas, Nevada (2002) 4324-4329
41. W. Lin, C. Qian and X. Huang, Disturbance Attenuation for a Class of Nonlinear Systems by Output Feedback, Proceeding of 15th International Symposium on Mathematical Theory of Networks and Systems, University of Notre Dame, August, 2002.
42. C. Qian and W. Lin, Universal stabilization of a class of nonlinear systems by output feedback, Proceeding of 2002 American Control Conference, Anchorage, Alaska, (2002) 122-127.
43. W. Lin, R. Pongvuthithum, and C. Qian, New results on regulation of nonlinear systems in power chained form, Proceeding of 2002 American Control Conference, Anchorage, Alaska, (2002) 2800-2805.
44. C. Qian and W. Lin, Almost disturbance decoupling for nonlinear systems via continuous feedback, Proceeding of the 15th IFAC World Congress, Barcelona, Spain, (2002).
45. C. Qian and W. Lin, A framework for global stabilization of nonlinear systems by continuous state feedback, Proc. of 40<sup>th</sup> IEEE Conference on Decision and Control, Orlando, FL., (2001) 3802-3807.
46. W. Lin and C. Qian, Adaptive control of nonlinearly parameterized systems, Proc. of the 40<sup>th</sup> IEEE Conference on Decision and Control, Orlando, FL., (2001) 4192-4197.
47. C. Qian and W. Lin, Non-smooth stabilizers for nonlinear systems with uncontrollable unstable linearization, Proceeding of 39th IEEE Conference on Decision and Control, Sydney, Australia, (2000) 1655-1660.
48. C. Qian and W. Lin, Practical output tracking of nonlinear systems with applications to underactuated mechanical systems, Proceeding of 39th IEEE Conference on Decision and Control, Sydney, Australia, (2000) 2090-2095.
49. C. Qian and W. Lin, Almost disturbance decoupling for a chain of power integrators perturbed by a lower-triangular vector field, Proceeding of 38th Conference on Decision and Control, Phoenix, AZ, (1999) 2082-2087.
50. W. Lin and C. Qian, Adding a power integrator: a tool for global stabilization of high-order lower-triangular systems, Proceeding of 38th IEEE Conference on Decision and Control, Phoenix, AZ, (1999) 1202-1207.
51. W. Lin and C. Qian, Adaptive regulation of high-order cascade systems: an adding a power integrator approach, Proc. of 38th IEEE Conference on Decision and Control, Phoenix, AZ, (1999) 4760-4765.
52. C. Qian and W. Lin, Using small feedback to stabilize a wider class of feedforward systems, Proceeding of 14th IFAC World Congress, Beijing, Vol. E. (1999) 309-314.
53. W. Lin and C. Qian, New results on global stabilization of feedforward systems via small feedback, Proceeding of 37th IEEE Conference on Decision and Control, Tampa, FL, (1998) 879-884.
54. W. Lin and C. Qian, Semi-global robust stabilization of nonlinear systems by partial state and output feedback, Proceeding of 37th IEEE Conference on Decision and Control, Tampa, FL, (1998) 3105-3110.

### **3b. Submitted/Under Preparation**

1. C. Qian, Output Feedback Stabilization of a Class of Nonlinear Feedforward Systems with Multiple Measurable States, submitted to 2009 American Control Conference.

2. S. Ding, C. Qian, and S. Li, Global stabilization of a class of feedforward systems with low-order nonlinearities, 2009 IEEE Conference on Decision and Control, under preparation.
3. S. Ding, C. Qian, and S. Li, Global stabilization of a class of inherently nonlinear systems in upper-triangular form, 2009 IEEE Conference on Decision and Control, under preparation.
4. M. Frye, S. Ding, and C. Qian, Global output feedback stabilization of a PVTOL aircraft, 2009 AIAA Guidance, Navigation and Control Conference and Exhibit, under preparation.

#### **4. Book Reviews**

#### **5. Other Articles**

### **B. Lectures, Seminars**

(Chronologically, NOT INCLUDING presentations given at conferences as shown in 3a)

#### **1. Scientific Lectures, Seminars**

1. 30-minute Lecture, "A Generalized Framework for the Global Output Feedback Stabilization of Inherently Nonlinear Systems," Workshop on Control of Distributed Parameter and Stochastic Systems, Shanghai, China, June 2005.
2. 30-minute Lecture, "Global Output Feedback Stabilization of Nonlinear Systems: A Homogeneous Approach," 1006<sup>th</sup> AMS Meeting, Lubbock, TX, April 2005.
3. 60-minute Lecture, "Global Strong Stabilization of Nonlinear Systems with Uncontrollable Unstable Linearization: A Continuous Feedback Framework," University of Central Florida, Orlando, FL., February 2001.

#### **2. Other Lectures, Seminars, Briefings, Short courses**

1. Five-Day Short Course, "New developments in nonlinear control research and applications," Invited Lecture Series of HwaYing Education and Culture Foundation, Southeast University, China, May 2008.
2. Three-Hour Tutorial Workshop, "New Developments in the Stabilization of Inherently Nonlinear Systems," The 6th World Congress on Intelligent Control and Automation, Dalian, China, June 2006.

### **B. Areas of Research Interest**

Robust and adaptive control, output feedback control, nonlinear systems theory, fault detection and recovery, optimal control, modeling and flight control of UAVs, power plant control, and biomedical systems.

### **D. Research Support**

#### **1. National/International**

Agency: U.S. National Science Foundation  
 Title: CAREER: Utilizing Nonlinearity--Leverage to Global Synthesis of Inherently Nonlinear Systems  
 Peer Reviewed: Y  
 Date: 2003-2009  
 Total amount: \$400,000  
 Role: Principal Investigator

Agency: U.S. National Science Foundation  
 Title: REU Site: Nonlinear Control and its Applications in UAVs and UGVs  
 Peer Reviewed: Y  
 Date: 2007--2010  
 Total amount: \$270,000.  
 Role: Co-Investigator

Agency: U.S. National Science Foundation  
 Title: IREE: Supplemental Funding for International Research and Education in Engineering for UTSA Students

Peer Reviewed: Y  
 Date: 2006-2007  
 Total amount: \$20,200  
 Role: Principal Investigator

Agency: U.S. National Science Foundation  
 Title: SGER: The Use of Autonomous Airships as a Mobile Cell Phone Network for Temporary Communication Restoration in Large-Scale Disasters  
 Peer Reviewed: Y  
 Date: 2006--2007  
 Total amount: \$30,000  
 Role: Principal Investigator

Agency: U.S. Naval Postgraduate School  
 Title: Investigation of Pseudospectral Methods in Aerospace Applications  
 Peer Reviewed: Y  
 Date: 2007-2008  
 Total amount: \$108,412  
 Role: Co-Investigator

## **2. State**

### **3. Companies**

Agency: Alstom Power Plant Laboratories  
 Title: Study of Control System Dynamic Performance for Supercritical Plants  
 Peer Reviewed: N  
 Date: 2008-2009  
 Total amount: \$16,114.00  
 Role: Principal Investigator

Agency: Alstom Power Plant Laboratories  
 Title: Benchmark Study of Fossil Plant Control System Dynamic Performance  
 Peer Reviewed: N  
 Date: 2008-2009  
 Total amount: \$13,158.00  
 Role: Principal Investigator

Agency: Alstom Power Plant Laboratories  
 Title: Development and Application of Nonlinear Model Predictive Control in Power Plants  
 Peer Reviewed: N  
 Date: 2006-2006  
 Total amount: \$10,801  
 Role: Principal Investigator

Agency: ARM Inc  
 Title: ARM Program in Embedded Systems and Mixed Signal Applications  
 Peer Reviewed: N  
 Date: 2005-2007  
 Total amount: \$40,000 Equipment  
 Role: Co-Investigator

### **4. Other including sub-contracts, internal UTSA funding through earmarks, institutional grants etc.**

Agency: U.S. Naval Postgraduate School  
 Title: Feasibility and Convergence Analysis of Legendre Pseudospectral Methods  
 Peer Reviewed: N  
 Date: 2006-2007  
 Total amount: \$25,000

Role: Principal Investigator

Agency: U.S. Naval Postgraduate School  
 Title: Real-Time Model Predictive Control of Nonlinear Systems  
 Peer Reviewed: N  
 Date: 2006-2006  
 Total amount: \$38,000  
 Role: Principal Investigator

Agency: UTSA Faculty Research Award  
 Title: Model Predictive Control for Autonomous Formation Control of UAVs  
 Peer Reviewed: Y  
 Date: 2006-2006  
 Total amount: \$5,000  
 Role: Principal Investigator

Agency: UTSA Faculty Research Award  
 Title: Intelligent Adaptive Control of Autonomous Robot in Complex Environments  
 Peer Reviewed: Y  
 Date: 2003-2003  
 Total amount: \$5,000  
 Role: Principal Investigator

Agency: UTSA Office of Research Development  
 Title: Robust Adaptive Nonlinear Control of Autonomous Airships: New Strategies for Multi-Purpose Missions in Uncertain Environments.  
 Peer Reviewed: Y  
 Date: 2005-2005  
 Total amount: \$1,500  
 Role: Principal Investigator

#### **5. Pending with funding agency**

Agency: San Antonio Area Foundation  
 Title: Analysis of Biodynamics for Obese Patients with Diabetes using Biosensor Devices.  
 Peer Reviewed: Y  
 Date: 2009  
 Total amount: \$19,430  
 Role: Principal Investigator

## **IV. SERVICE**

### **A. Professional Activities:**

**1. Current Professional and Scientific Organizations/Societies** If election/nomination required then mark with \*

1998-Present, The Institute of Electrical and Electronics Engineers (IEEE), Senior Member '03, Member '02, Student Member '98.  
 2008-Present, American Society of Engineering Education (ASEE), Member.

### **2. Past and Current Positions and/or Offices Held in Professional Organizations**

Years (from-to)	Name of Organization	Position held
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**3. Other Professional Activities** (e.g., National and State Consultantships, Review Panels and Committees, Editorial Boards, Continuing Education Lectures Presented, etc.)

**Editor/Editorial Board Member**

1. Subject Editor, International Journal of Robust and Nonlinear Control, Wiley, International Federation of Automatic Control (IFAC), 2006-present.
2. Associate Editor, IEEE Control Systems Society Conference Editorial Board, 2003-2008.

#### **Meeting/Symposium Organizer/Chairmanship**

1. Local Arrangements Chair, IEEE Multi-Conference on Systems and Control, 2008.
2. Publicity Chair, IEEE System of Systems Engineering, 2007.
3. Symposium Chair, ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications, 2007.

#### **Session Chair/Organizer**

1. 2005 American Control Conference, Chair for Session: Control of Output Feedback Nonlinear Systems
2. 2004 IEEE Conference on Decision and Control, Chair for Session: Stability and Stabilization
3. 2003 IEEE International Symposia of Intelligent Control, Organizer/Chair for Session: Complex Systems and Applications,
4. 1999 IEEE Conference on Decision and Control, Chair for Session: Stabilization of Nonlinear Systems

#### **Reviewer for Journals**

- IEEE Transactions on Automatic Control,
- IEEE Transactions on Circuit and Systems II,
- International Journal of Systems Science,
- IET Control Theory & Applications
- IFAC Journal Automatica (Outstanding Reviewer of 2003)
- Systems & Control Letters,
- International Journal of Robust and Nonlinear Control,
- IEEE Transactions on Control Systems Technology,
- Mathematics of Control, Signals and Systems,

#### **Review Panels (for grants)**

Year, Agency, Panel Name

#### **Continuing Education Seminars Given**

1. Three-Hour Tutorial Workshop, "New Developments in the Stabilization of Inherently Nonlinear Systems," The 6th World Congress on Intelligent Control and Automation, Dalian, China, June 2006.

#### **4. Community Service**

Date, Service, Agency

#### **B. Committees:**

##### **1. Department (specify if Chair)**

2008	Department ABET PO Committee--Member.
2008-2009	Department Faculty Search Committee--Member.
2007-2008	Department Faculty Search Committee--Member. Evaluated and Interviewed the applicants for three faculty positions.
2005-Present	Graduate Advisor of Record, Department of Electrical and Computer Engineering.

2001-Present	EE Graduate Studies Committee--Member.
2006-Present	Department TA Selection Committee –Member
2006-Present	DFRAC--Member
2005-Present	EE Systems and Control Concentration –Coordinator.
2007	Department Administrative Associate Hiring Committee--Member. Assisted Department Chair interview and evaluate the applicants for Dept. Staff position.
2006	Department PPE Committee -- Member.
2006	Undergraduate Curriculum Committee--Member.
2006-2007	Department Faculty Search Committee –Member
2004-2005	EE Department Faculty (Tenure Track) Search Committee--Member.
2004	EE Graduate Student Travel Committee-- Member.
2003-2004	EE Department Faculty Search Committee--Member.
2004-2006	EE Department Award Committee--Member.
2004-2006	EE Department Space Committee--Member.
2001-2002	EE Department Faculty Search Committee--Member.
2002	EE Department Ph.D. Student Recruitment Committee--Member.
2001	EE Department Award Committee for Anu Rai Memorial Endowed Scholarship--Member.

## **2. College of Engineering** (specify if Chair)

2008	Member of Governing Board, The Center of Excellence for Engineering Education, UTSA.
2006-Present	COE Dean's Scholarship Committee--Member.
2006-Present	COE ABET Committee--Member.
2003-2004	College EGR Course Evaluation Committee -- EE Representative.

## **3. University** (specify if Chair)

2008	President's Distinguished Awards Committee –Member.
2008	University Review Committee—Member appointed by COE Dean, Reviewed 1 Assistant Professor in COB and 1 Assistant Professor in COE Biomedical Engineering Dept.
2007	University Review Committee—Senior Faculty Member from COE, evaluated three candidates for the assistant professor positions in Civil Engineering and Mechanical Engineering.
2005-2006	University Faculty Grievance Panel—President's Panelist.
2005	UTSA Academic Policy and Requirements Committee—Member.
2005	UTSA Presidential Dissertation Fellowship Award Committee—Member.
2003-2005	University Faculty Grievance Panel--Panelist.

## **4. Other**

2005	<b>Program Committee Member</b> , Joint Conference of the 44th IEEE Conference on Decision and Control (IEEE CDC), and 2005 European Control Conference (ECC), Seville, Spain.
2004	<b>Panelist</b> of Central Texas Section, IEEE Senior Member Review Panel.
2002	<b>Program Committee Member</b> , 41st IEEE Conference on Decision and Control, Las Vegas, NV.

## **C. Administrative Responsibilities:**

### **1. Department**

2005-present, Graduate Advisor of Record for Ph.D. EE, MSEE and MSCompEgr

### **2. College**

### **3. University**

**4. Staff Currently Supervised (not including students):**

**V. OTHER INFORMATION**

**A. Patents Pending/Issued:**

**B. Media Coverage**

**C. Other**